WHAT IS CLAIMED IS:

1. An X-ray-tomographic imaging apparatus comprising:

an X-ray generation unit for applying an X-ray;

a first moving unit for changing a direction in which the X-ray generation unit applies the X-ray and making the X-ray generation unit move;

a solid-image pickup unit that includes a plurality of solid-image pickup elements and that converts the X-ray into at least one electrical signal;

a second moving unit for making the solid-image pickup unit move; and

a control unit that controls the first moving unit and the second moving unit so that the X-ray generation unit applies the X-ray to predetermined coordinates on a light-receiving surface of the solid-image pickup unit, and that controls X-ray application performed by the X-ray generation unit and driving of the solid-image pickup unit,

wherein the control unit controls the driving of the solid-image pickup unit so that the solid-image pickup unit accumulates and keeps at least one electrical charge while the X-ray generation unit repeats the X-ray application a predetermined number of times, or over a predetermined period of time.

2.   The X-ray-tomographic imaging apparatus according to Claim 1, wherein the control unit further controls the driving of the solid-image pickup unit so that the solid-image pickup unit accumulates and keeps the electrical charge over a predetermined period of time during which the X-ray generation unit and/or the solid-image pickup unit move.

3.   The X-ray-tomographic imaging apparatus according to Claim 1, wherein the control unit further controls the driving of the solid-image pickup unit so that the solid-image pickup unit discharges the electrical charge after the X-ray application is repeated a predetermined number of times or a predetermined period of time passes.

4.   The X-ray-tomographic imaging apparatus according to Claim 1, further comprising:

an analog-to-digital conversion unit for analog-to-digital converting of an output from the solid-image pickup unit into image data;

a storage unit for keeping the image data that is output from the analog-to-digital conversion unit at predetermined time intervals; and

a gray-scale adjuster unit for performing gray-scale conversion for the image data stored in the storage unit by

using a predetermined gray-scale conversion function.

5. The X-ray-tomographic imaging apparatus according to Claim 4, wherein the gray-scale conversion function is determined, based on the maximum value and minimum value of the image data.

6. The X-ray-tomographic imaging apparatus according to Claim 4, further comprising a display unit for displaying an image subjected to the gray-scale conversion by the gray-scale adjuster unit.

7. The X-ray-tomographic imaging apparatus according to Claim 1, further comprising:

an analog-to-digital conversion unit for analog-to-digital converting of an output from the solid-image pickup unit into image data;

a storage unit for keeping the image data that is output from the analog-to-digital conversion unit at predetermined time intervals; and

a projection-image generation unit for subtracting two items of image data from the image data stored in the storage unit.

8. An X-ray-tomographic imaging apparatus for

obtaining image data of a predetermined tomographic section
in a subject by using a plurality of X-ray projection images
achieved by a plurality of X-rays that is made incident on
the predetermined tomographic section from different
directions, the X-ray-tomographic imaging apparatus
comprising:

a solid-image pickup unit that can convert each of the
X-ray projection images to a signal and read the signal in a
non-destructive reading manner; and

a control unit for making the solid-image pickup unit
accumulate the signals of the X-ray projection images and
read the signals in a non-destructive reading manner during
the signal accumulation.

9. An X-ray-tomographic imaging method used for an X-
ray-tomographic imaging apparatus having a solid-image
pickup unit that can convert an X-ray projection image to a
signal and read the signal in a non-destructive reading
manner, the X-ray-tomographic imaging apparatus being
provided for obtaining image data of a predetermined
tomographic section in a subject by using a plurality of X-
ray projection images achieved by a plurality of X-rays that
is made incident on the predetermined tomographic section
from different directions, the X-ray imaging method
comprising the steps of:

performing accumulation control for making the solid-image pickup unit accumulate the signal of each of the X-ray projection images; and

performing read control for making the solid-image pickup unit read the signal in a non-destructive reading manner during the signal accumulation.

10. A program that can be executed by an information processing apparatus having program code for practicing the X-ray-tomographic imaging method according to Claim 9.